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Assessing the Potential Farm-to-Institution Market in Central and Northeast Minnesota

An analysis of the market potential for locally-raised foods by educational and healthcare institutions in 12 Minnesota counties

By Ryan Pesch, Extension Educator, University of Minnesota

In partnership with:
Center for Small Towns and Extension Center for Family Development

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AN ANALYSIS OF THE MARKET POTENTIAL OF LOCALLY RAISED FOODS BY EDUCATIONAL AND HEALTHCARE INSTITUTIONS IN 12 CENTRAL AND NORTHEAST MINNESOTA COUNTIES

July 2014

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OVERVIEW

University of Minnesota Extension conducted a survey of educational and healthcare food service directors in the 12 counties of Central and Northeast Minnesota (see Figure 1) in fall 2013 **to profile these institutions' existing food purchasing habits over the previous 12 months and estimate the potential economic impact on the region if these institutions bought more foods from local farms.**

Respondents varied greatly in size from 12 to 6,600 meals served daily, yet all purchased many of the same foods, such as cucumbers, tomatoes, and ground beef. Although some respondents have processing requirements for select kinds of produce (lettuce especially), overall, many said they are willing to buy fresh fruits and vegetable in whole form.

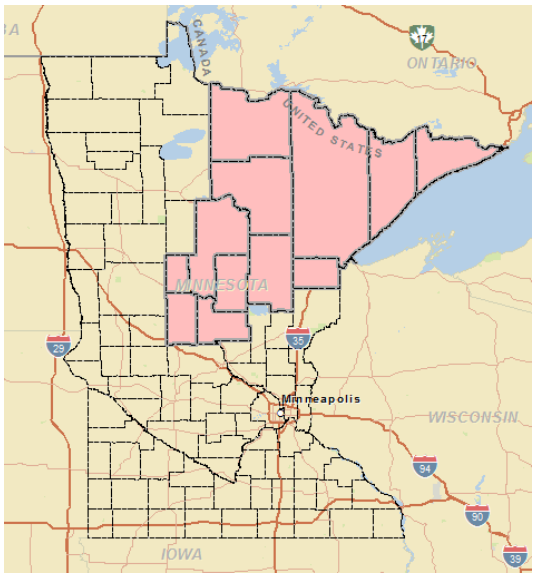


FIG.1: 12-County Study Area

There are 68 K-12 schools and 396 healthcare facilities operating in the region highlighted in Figure 1. The findings outlined in this report are based on *completed* surveys we received from 149 food service directors at educational and healthcare facilities *serving meals* – 40 at educational institutions and another 109 at healthcare institutions. This translates to a 61 percent response rate for educational food service directors (40 out of 66 facilities serving meals) and a 39 percent response rate for healthcare food service directors (109 out of 278 facilities serving meals). The response rate for schools is good, and while the rate for healthcare facilities was considerably less, both rates provided sufficient data for our analyis.

We estimate that, collectively, institutions serving meals buy from 1.5-2.6 million pounds of food products that could be grown or raised locally each year. This represents a viable market opportunity, although realistically, local growers and producers would capture only a small portion of this market. For the purposes of this study, we assume 20 percent as the potential share of the viable markets for local growers and producers, based in part on some limited information about goals set by health and school institutions. This rate of market capture would net regional farmers an estimated $480,000 in a standard summer growing season and about $590,000 in an extended growing season. Over half of this potential comes from selling ground beef.

But 20 percent may be high in terms of the potential share of possible institutional food purchases going to local growers and producers, given that the survey research carried out for this report shows that the current share for local foods products at 2.2.percent for schools and 0.7 percent for health care facilities.

For the region as a whole, a 20 percent capture rate would inject between $250,000 and $360,000 into the economy—including the ripple effect of additional sales to regional farm suppliers and the like. This increase is based on the assumption that institutions will pay a price premium of 25 percent above typical wholesale prices for local food products. (Price premiums for local foods are common, but we do not explore whether the institutions would be able to sustain these higher prices.) This estimated economic impact of $250,000 to $360,000 is lower than the amount of

dollars captured by regional farmers because it incorporates the substitution effect of the locally produced farm products: The shift to local would reduce sales of non-local farm goods by wholesalers in the region.

To reach these levels of economic activity, however, the region's institutions and producers have a long way to go – respondents reported buying only $33,000 worth of food directly from local farmers in the 12 months prior to the survey (fiscal year 2012-2013).

KEY FINDINGS

- About 30 percent of total respondents bought foods directly from local farmers in fiscal year 2012-2013, and a majority of both educational and healthcare respondents who currently do not purchase direct from a producer profess interest in doing so.

- Healthcare institutions represent a larger potential market for the purchase of locally grown and raised foods than educational institutions. We conclude this because healthcare respondents report buying broader mixes of foods available in the region than educational respondents. A majority of educational food service directors limit their food purchases to about five products, while a majority of healthcare food service directors reported buying about 10 products. In addition, healthcare facilities are open year round, thus increasing the potential market for local foods.

- All food service respondents are somewhat willing to purchase fresh fruits and vegetables in whole form (unprocessed), although educational institutions have less flexibility than healthcare facilities.

- The 66 educational and 287 healthcare facilities that serve meals in the 12-county region source an estimated 1.5 to 2.6 million pounds of food that could be grown in the region annually under a standard summer produce season and extended season respectively.

- Estimates for the total market potential of farm-to-institution sales in the 12-county area range from $2.3 million for a standard summer produce season to $2.9 million for an extended season. A 20 percent capture rate of this market would net regional farmers between $480,000 and $590,000 annually. Over 50 percent of this market potential derives from ground beef sales due to its relatively high cost per pound and high demand by institutions.

- The potential economic impact of institutions buying more local foods on the regional economy as a whole could be significant. Our estimates show that if institutions bought 20 percent of locally available foods directly from farmers, their purchases would generate between $250,000 and $360,000 in total economic activity in the 12-county region – a significant amount of which would derive from an increase in sales to regional farm suppliers. This increased economic activity results from our assumption that institutions will pay a price for local food products that is 25 percent above typical wholesale prices. This overall economic impact is lower than the estimated dollar totals for increased sales by regional farmers because of the countervailing impacts of lost sales by regional food wholesalers – the substitution effect.

- The levels of estimated economic impacts presented in this report rest on assumptions about local food purchases by healthcare and educational institutions, and those assumptions may be problematic. The research here assumes that local growers and producers can capture 20

percent of the potential institutional market for farm products that can be purchased locally, but at present local growers capture between 0.7 and 2.2 percent of those institutional sales, according to our survey findings. The research also assumes a 25 percent price premium for locally produced farm products, but we do not explore whether the institutions would be able to sustain these higher prices. Also we do not model the impacts of budget cutbacks elsewhere that the institutions might have to make in order to afford the price premium, or the impacts if those higher costs are passed along to taxpayers or to residents and students.

- Season extension offers growers an opportunity to meet market demand from institutions if growers use season extension to produce quality products consistently. More than half of the total market potential for selling fresh fruits and vegetables to institutions lies outside the traditional summer growing season in Central and Northeast Minnesota.

BACKGROUND

The need for this study in 2013 emerged from previous work by the Minnesota Statewide Health Improvement Program (SHIP) and the need of the Extension Center for Family Development (Family Development) to evaluate its work funded through a Community Transformation Grant offered by the Centers for Disease Control and Prevention. Because of its work with institutions such as K-12 schools, hospitals, and long-term care facilities, Family Development and their SHIP counterparts wanted to better understand the economic characterstics of this potential market for local foods as more institutions orient their menus to local food sources and produce in whole form. This re-orientation of organizational food buying is evident in K-12 schools (IATP, 2012) and healthcare facilities, which offer a promising year-round market (George et al., 2010).

METHODOLOGY

In September 2013, Extension sent a survey on food-buying practices to food service directors at 68 K-12 schools and 396 licensed healthcare facilities in Central and Northeast Minnesota (Appendix 4). Extension contacted food service directors by mail, first sending a cover letter and survey form, and then following up with a postcard reminder. Extension also included a $9 gift card as an incentive to participate.

Extension received 190 responses total for a 41 percent response rate overall, but only 149 of 190 were responses from facilities that reported serving meals; the remainder reported not serving meals at all. Thus, **this report and analysis are based on the 149 complete survey responses from facilities serving meals – 40 from food service directors at public K-12 schools and 109 from directors at healthcare facilities.**

Considering our purpose to measure the size of the farm-to-institution market at educational and healthcare facilities, Extension also estimated the total number of meals served at educational and healthcare facilities in the 12-county region that did not respond to our survey. We started by using the Minnesota Department of Health's (MDH's) *Health Care Facility and Provider Database* and the Minnesota Department of Education's (MDE's) *Organization Reference Glossary* to identify all educational and healthcare institutions in the 12-county region where meals are served on site. (See the Reference list for website addresses.)

Extension extrapolated results from the survey sample to estimate the total number of institutional meals served in the region, as well as the total amount of food purchased annually by institutions. We further refined these estimates according to availability of crops during a standard summer

growing season and an extended growing season to identify a realistic market potential for local growers.

Lastly, Extension used an input-output model (IMPLAN) to estimate the economic impact of the previous year's farm-to-institution purchases and the potential impact on the regional economy of sourcing 20 percent of institutional food purchases from local growers.

SURVEY FINDINGS

As noted, Extension received 149 complete and usable surveys from food service directors at K-12 educational and healthcare institutions in Central and Northeast Minnesota.

The 40 educational food service directors who responded serve over 42,000 meals daily, with meal counts ranging from 84 meals served daily at the lowest-volume facility to 6,600 at the highest. All respondents are employed at public K-12 schools.

The 109 healthcare food service directors who responded serve a total of slightly more than 20,000 meals daily, with counts ranging from 12 meals served daily at the lowest-volume facility to 1,500 at the highest. All respondents are employed at hospitals or long-term care facilities, such as nursing homes and assisted living facilities.

Majority of non-purchasing institutions show interest in buying local

A majority of both educational and healthcare respondents who have not purchased local foods in the past year indicate interest in buying directly from local farmers, although interest is higher among educational respondents (see Figures 2 and 3). This finding may not be a surprise given that advocacy groups and the media have spotlighted farm-to-school food-buying efforts over the past five years, while farm-to-healthcare efforts have only recently been highlighted.

FIG. 2: Educational interest in local food purchasing (67%)

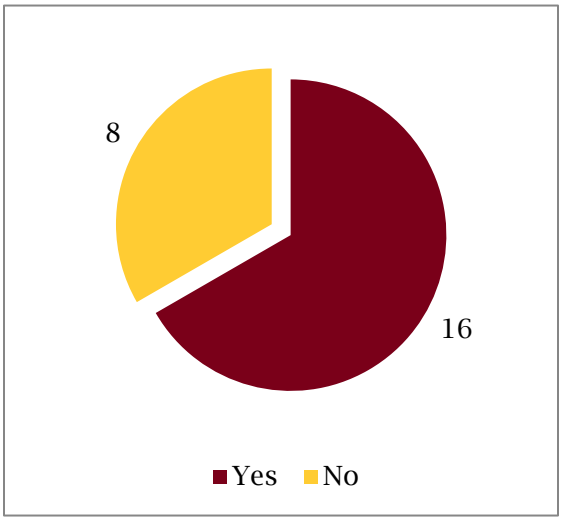
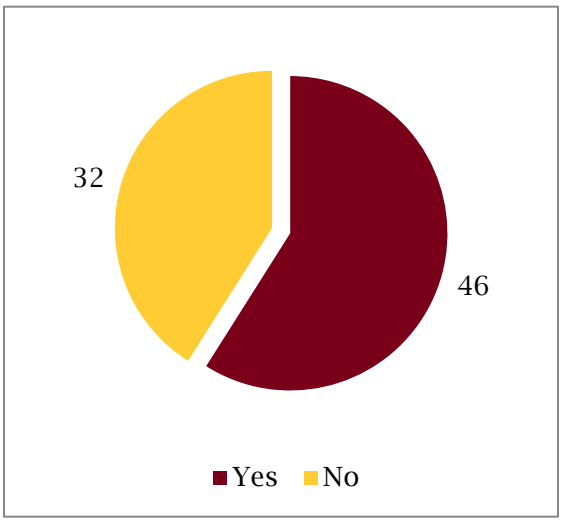


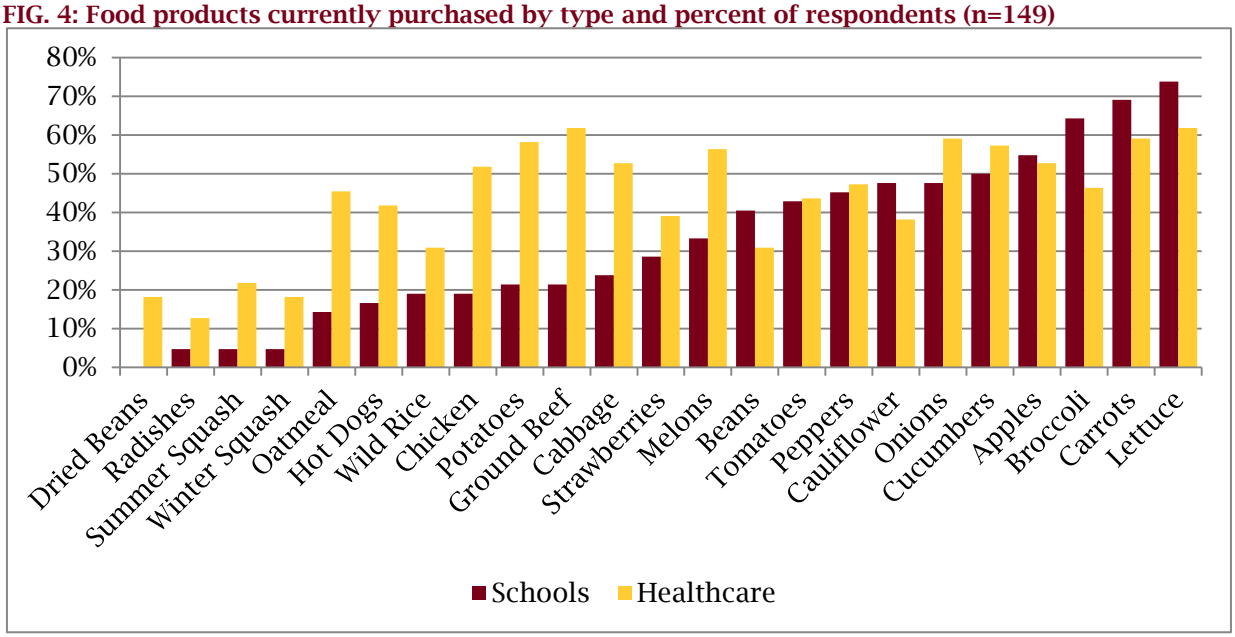
FIG. 3: Healthcare interest in local food purchasing (59%)



Healthcare facilities buy a broader mix of products

The survey asked food service directors about their purchasing habits for a range of food products commonly grown or raised in Minnesota, including fresh fruits, vegetables and meats (see Appendix 4 or 5 for listing). About half of the foods are in high demand – apples and lettuce, for example – and so are targets for consistent sales to institutions. Other crops – such as winter squash and dried beans – would be of interest to only a minority of food service directors. When contrasting the purchasing patterns of healthcare and educational institutions, clearly a larger percentage of healthcare food service directors purchase a broad mix of foods than their counterparts in education. School food service directors limit their food purchases to fewer products, with only five reported by a majority of respondents. In contrast, healthcare food service directors report 10 products purchased by a majority of healthcare facilities (see Figure 4).

FIG. 4: Food products currently purchased by type and percent of respondents (n=149)



Direct purchasing from local farmers

Both educational and healthcare food service directors reported purchasing directly from local farmers in fiscal year 2012-2013 – 40 percent and 21 percent respectively (see Figures 5 and 6).

FIG. 5: School direct purchasing in 2013 (40%)

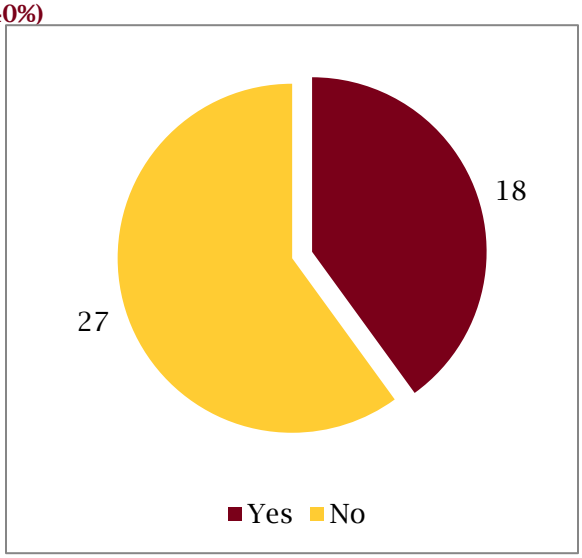
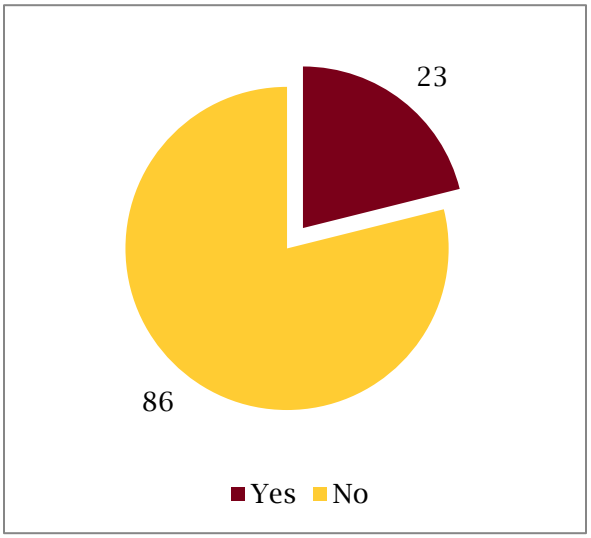


FIG. 6: Healthcare direct purchasing in 2013 (21%)



The survey also asked respondents to identify which food products they purchased in the previous 12 months. Mirroring the overall high rate of purchasing direct from producers, a higher percentage of school food service directors also report purchasing a mix of products from local producers than healthcare institutions (see Figures 7 and 8).

FIG. 7: Healthcare local purchases (n=109)

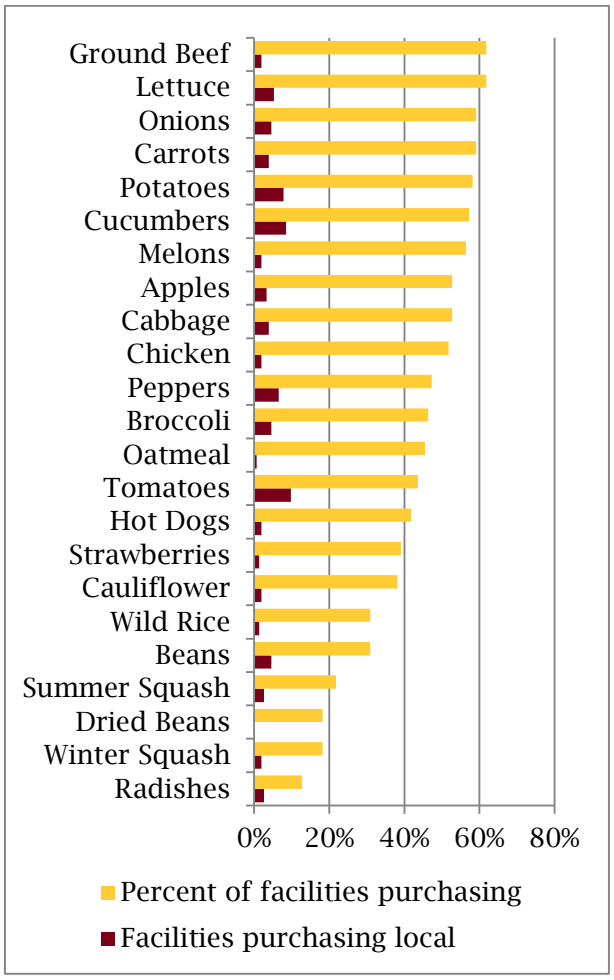
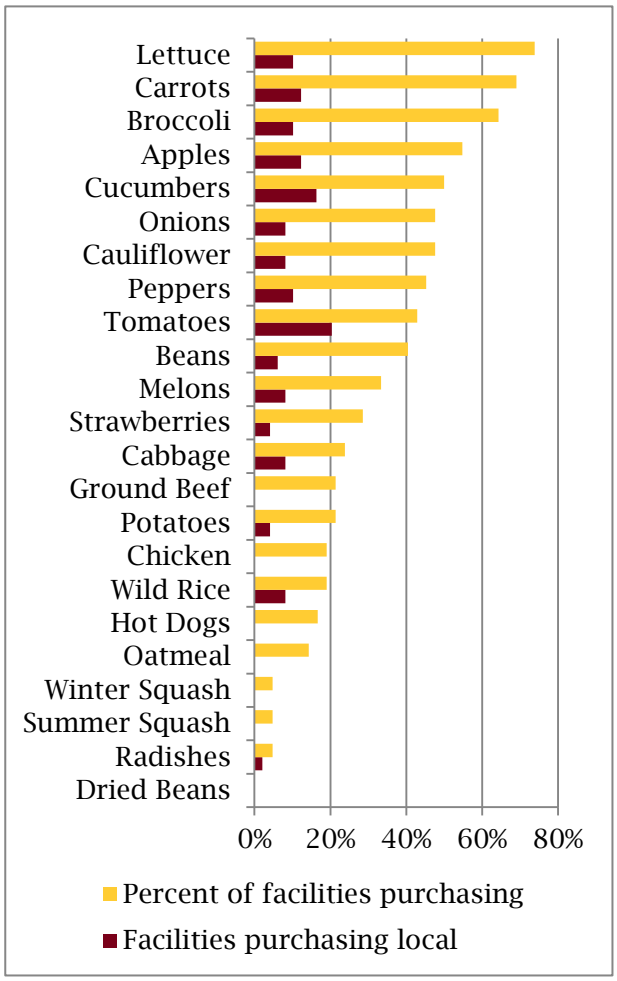


FIG. 8: Educational local purchases (n=40)



Questions about barriers and whole form preferences

The preference for pre-processed produce and procurement policies that prohibit direct food-buying from farms are often cited as major barriers to supplying institutional customers with local foods. These barriers have been noted in past state and national research and through surveys of local growers seeking to supply food service establishments (George, et al., 2010; Pesch, 2012; Strohbehn, et al., 2004). Therefore, the survey asked food service directors to indicate whether or not they would consider purchasing a product in whole form and whether or not their contract prohibited them from purchasing direct from a farm. Because very few local growers have processing capacity, our intention was to determine the degree of flexibility that institutions have to purchase local foods in unprocessed form.

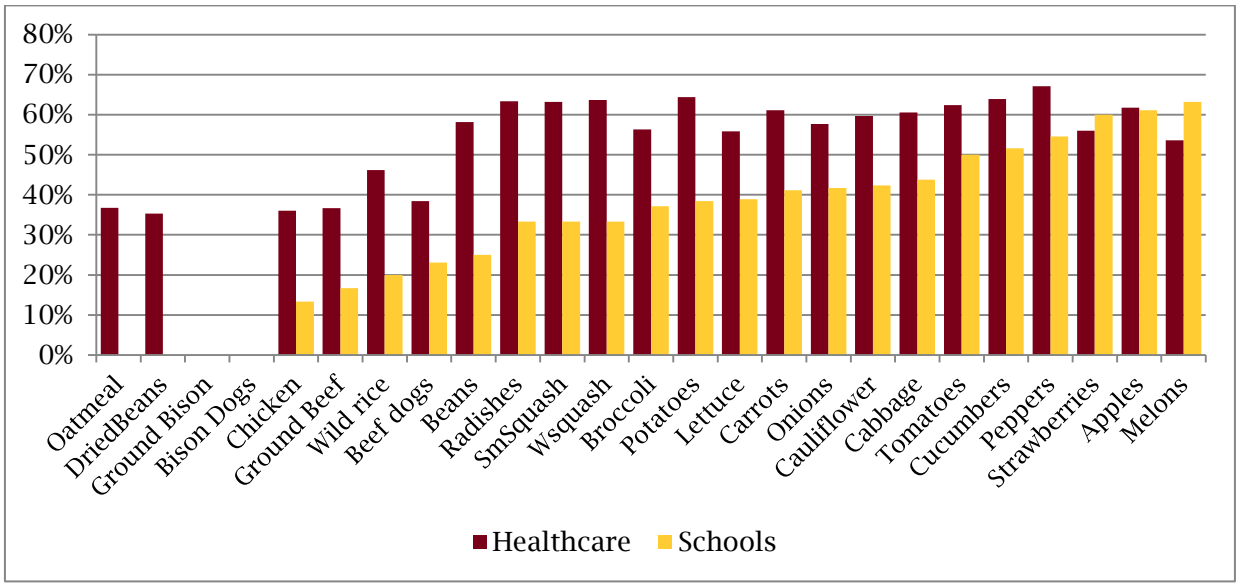
The survey showed that few respondents from educational or healthcare facilities have contracts prohibiting the purchase of foods from local farmers. Only 16 of 184 food service directors who answered the questions stated that their contracts prohibited purchases from local farms (4 educational and 12 healthcare facilities).

When asked whether whole forms of foods were acceptable, respondents said they are willing to buy some foods in whole form, but are less flexible about other foods. . This was especially true for educational food service directors. Overall, a majority of healthcare respondents said 10 of the 23

products that they had purchased before were acceptable in whole form, whereas a majority of educational respondents indicated five products were acceptable in whole form (see Figure 9). For example, 47 of 70 healthcare survey respondents (or 67 percent) who had purchased peppers said they would buy them in whole form, compared with only 54 percent of educational survey respondents who had bought peppers.

Beans are the fruit or vegetable least acceptable in whole form to school respondents – with only 25 percent of educational food service directors saying they would buy beans in whole form, compared to 58 percent of food service directors at healthcare institutions. A total of 56 percent of healthcare respondents said they would accept lettuce in whole form, compared to 39 percent of educational respondents, reinforcing the contrast in flexibility between the two institutional types.

FIG. 9: Products respondents would consider buying in whole form, by type of institution



MARKET ESTIMATES

Extension estimated the market potential for locally-raised foods at educational and healthcare institutions by extrapolating product estimates from our survey research to account for the total number of meals served at these institutions throughout the region. Here we estimate the total meals served at both those institutions that responded to our survey and those that did not.

Quantifying meals served daily at educational institutions

To obtain the number of meals served daily at educational institutions in the 12-county region, we started by identifying institutions through the Minnesota Department of Education's *Organization Reference Glossary,* or MDE-ORG. We then quantified meals served daily at the institutions (mostly schools) through numbers supplied by survey respondents and estimates of average daily attendance (membership) at the non-responding educational facilities.

Counting meals reported through surveys

In fall 2013, Extension sent its survey to all 68 K-12 schools in the 12-county region of Central and Northeast Minnesota – as listed on MDE-ORG. As noted, 40 educational food service directors responded. They said they serve 42,278 meals daily.

Estimating meals based on average daily attendance

Extension estimated 73,597 meals served daily by using average daily membership figures from MDE's *Data Reports and Analytics* page (see Reference list for website address). Based on MDE's membership figures, Extension calculated that 1.06 meals per student are served daily at educational institutions throughout the region and then applied the 1.06 per student level to the facilities that did not respond to our survey. The total number of meals identified through this process, for schools that did not respond to the survey, was 31,319 or 43 percent of the estimated 73,597 meals served in the 12-county region. The other 57 percent of the 73.597 meals are served by schools that responded to the survey.

Total estimated size of educational food-buying market

As noted, we identified a total of 66 educational facilities in the 12-county region that serve an estimated total of 73,597 meals daily. This represents a significant market for purchase of locally grown and raised foods.

Identifying total number of meals served daily at healthcare facilities

Extension used a process to estimate the total number of meals served daily at healthcare facilities in the region similar to the one outlined above for educational facilities.

We started by using the Minnesota Department of Health's *Health Care Facility and Provider Database* (see Reference list for website address) to identify the full range of healthcare facilities in the 12-county region, including hospitals and long-term care facilities. We used two methods to identify the size of the establishment and the number of meals: surveys of food service directors and estimates based on online research or correspondence with facility management. These two methods are explained below.

Counting meals reported through surveys

In fall 2013, Extension sent its survey to the 396 Central and Northeast Minnesota healthcare facilities identified in the MDH licensed facility database. A total of 150 food service directors responded, including 40 who indicated their facility does not prepare and serve meals and one who

sent in an unusable survey. The 109 respondents who do serve meals reported serving 20,063 of them.

Estimating meals based on online research and correspondence

Extension contacted the remainder of the organizations listed in the MDH facilities database via email or researched them online to identify the size of their establishment by units and number of residents, as well as determine whether they serve meals. Our team used www.minnesotahelp.info, a listing of public information targeted to users of senior and social services, as the primary online information source. We created an estimate of meals served for each institution based on the assumption of three meals per day per resident, unless otherwise noted. We discovered many facilities that do not serve meals or have their meals prepared by a nearby healthcare facility – a common practice among small assisted living facilities. The total number of meals identified through this process was 13,607, or 40 percent of the estimated 33,670 meals served at healthcare facilities in the 12-county region. The other 60 percent of the estimated 33,670 meals are served by healthcare facilities that responded to the survey.

Total estimated size of the healthcare food-buying market

Although we sent surveys to all 396 healthcare facilities in the licensed facility database, we identified only 278 facilities in the 12-county region that serve meals, for an estimated total of 33,670 meals daily (as noted). A majority of these facilities are small assisted living facilities, with 193 of 278 serving 100 or fewer meals daily and over half serving 50 or fewer meals daily.

Estimating regional product demand

Extension extrapolated the reported food purchasing patterns of all 149 participating institutions (those that serve meals and provided complete responses to the product survey) to estimate the market potential for the whole region.

To estimate the amount of food purchased annually, we assumed that respondents bought a mix and amount of foods every month consistent with survey responses as outlined (see text box to the right). This is a reasonable assumption because participating food service directors indicated anecdotally that their monthly fresh produce and other food purchases are fairly consistent across seasons.

CALCULATING product-buying estimates for educational and healthcare institutions:

1. Convert the number of pounds purchased by time period (weekly, bi-weekly, etc.) for each food into the amount purchased per meal on a monthly basis.
2. Calculate the average number of pounds per meal for those facilities that purchased a particular product. For example, eight of nine facilities that purchased fresh apples averaged less than one hundredth of a pound for all meals served monthly (0.0069 lb. per meal per month).
3. Apply average pounds per monthly meal count to total number of meals served in region.

When applying the purchasing profile to the region, we assumed our sample of survey respondents is representative of all institutional facilities in the 12-county region. In doing so, we assumed other facilities purchase foods in the same proportion. For example, we assumed 60 percent of all the facilities purchase apples, the same as the proportion of our survey respondents. We also assumed all facilities purchase the same volume of foods by meal as the average for our respondents.

MARKET POTENTIAL BASED ON TWO GROWING SEASONS

Estimating food purchases for an entire year greatly overemphasizes the size of the institutional market potential for local growers because of fruit and vegetable growing conditions in Central and Northeast Minnesota. To account for this, we made estimates based on two scenarios for growing seasons. In our first scenario, we used a standard Northern Minnesota growing season based on when a fruit or vegetable is typically available for sale, assuming production of a field-grown fruit or vegetable without any season-extending technology or methods. We assumed other food products are available year-round, such as meat and whole grains. In our second scenario, we used an extended growing season that could reasonably be realized through readily available technologies and methods for growing fruits and vegetables over an extended season or for storing crops for later sale.

Scenario 1: Standard fruit and vegetable growing season

The standard growing season in Northern Minnesota is relatively short compared with other parts of the nation – generally about four to five months from June through to as late as October. This is the time that field-grown produce is available, excluding produce grown hydroponically or through some other kind of non-soil-based growing technique.

Healthcare represents a larger potential market than schools

Using retail pricing statistics from United States Department of Agriculture (USDA) for the range of produce listed below (USDA Agricultural Marketing Services, 2012), we were able to estimate a market potential not only in volume of food products but also value in dollars. The average retail price data is derived from national supermarket price checks and represents reasonable benchmarks for an analysis such as this. Of course, local market conditions may vary significantly between growers and buyers.

One major finding when comparing healthcare and school respondents is that healthcare facilities represent a larger potential market than educational institutions under both the standard- and extended-season scenarios. This is especially evident when comparing the total months available for sales to these institutions (see Tables 1, 2, 3 and 4 for details). Although K-12 schools serve more meals daily because they have more people to feed, healthcare facilities are open year-round and can purchase a wider variety of foods from regional farmers.

TABLE 1: Educational market potential** scenario for standard Northwest Minnesota growing season (n=40)

Product:	Total months available*	Lbs. of food	Average retail price per pound	Market potential
Beans	0.5	11,485	$1.47	$16,883
Broccoli	2	9,437	$1.55	$14,627
Cabbage	2	2,424	$0.81	$1,972
Carrots	2	87,933	$0.85	$74,743
Cauliflower	2	4,524	$1.10	$4,977
Cucumbers	0.5	1,286	$0.67	$862
Tomatoes	0.5	2,142	$1.30	$2,778
Peppers	0.5	775	$1.41	$1,093
Lettuce	1	11,284	$1.33	$14,951
Potatoes	1	5,095	$0.89	$4,543
Onions	1	56,445	$0.68	$38,383
Radishes	1.5	117	$1.00	$117
Summer Squash	0.5	74	$1.29	$95
Winter Squash	2	471	$0.94	$444
Apples	1	21,460	$1.35	$28,993
Melons	0.5	4,034	$0.56	$2,259
Strawberries	0	-	$2.93	$-
Wild Rice	9	3,882	$6.69	$25,973
Oatmeal	9	5,797	$2.72	$15,767
Dried Beans	9	-	$2.19	$-
Chicken	9	73,521	$1.48	$108,811
Ground Beef	9	84,673	$3.79	$320,910
Hot Dogs	9	14,290	$3.19	$45,586
Total Purchases		**401,150**		**$724,765**

*Months available during the 9-month school year.

**Market potential listed may differ from levels derived from pounds multiplied by price due to rounding in table for price and pounds

TABLE 2: Healthcare market potential** scenario for standard growing season (n=109)

Product:	Total months available	Lbs. of food	Average retail price	Market potential
Beans	2.5	11,227	$1.47	$16,503
Broccoli	4	18,442	$1.55	$28,585
Cabbage	4	19,663	$0.81	$15,993
Carrots	4	22,725	$0.85	$19,316
Cauliflower	4	10,192	$1.10	$11,211
Cucumbers	2.5	11,023	$0.67	$7,385
Tomatoes	2.5	13,755	$1.30	$17,835
Peppers	2.5	7,897	$1.41	$11,135
Lettuce	4	40,188	$1.33	$53,249
Potatoes	3	91,591	$0.89	$81,669
Onions	3	21,795	$0.68	$14,821
Radishes	4.5	6,997	$1.00	$6,997
Summer Squash	2.5	2,632	$1.29	$3,382
Winter Squash	2	3,256	$0.94	$3,066
Apples	2	27,277	$1.35	$36,851
Melons	2	30,773	$0.56	$17,233
Strawberries	1	3,909	$2.93	$11,454
Wild Rice	12	26,294	$6.69	$175,906
Oatmeal	12	39,228	$2.72	$106,699
Dried Beans	12	13,102	$2.19	$28,694
Chicken	12	211,582	$1.48	$313,142
Ground Beef	12	371,449	$3.79	$1,407,790
Hot Dogs	12	50,796	$3.19	$162,039
Total Purchases		**1,055,793**		**$2,550,957**

**Market potential listed may differ from levels derived from pounds multiplied by price due to rounding in table for price and pounds

Scenario 2: Extended fruit and vegetable season

Over the past decade, growers and researchers have developed season-extension techniques and technologies as demand for local produce has increased and growers work to maintain consistent supply (Coleman, 2009; Nennich, 2004). Even in cold Minnesota, new and rediscovered technologies are being deployed to lengthen the produce season, including high and low tunnels, as well as cold frames and post-harvest storage facilities.

For this study, University of Minnesota Extension based the length of the extended season on reasonable produce availability for growers using the aforementioned technologies and also based on information from correspondence with USDA resources and University of Minnesota faculty and researchers. Cindy Tong, a post-harvest handling specialist with the University's Department of Horticulture, provided resources on storage capabilities, including USDA Handbook 66, "The Commercial Storage of Fruits, Vegetables, and Florist and Nursery Stocks," and "Minnesota Foods in Season" on Extension's Farm to School website (see the Reference list for website addresses). Steve Poppe, a horticulture scientist with the West Central (Minnesota) Research and Outreach Center, estimated strawberry availability based on first-year trials with day-neutral strawberry production near Morris, MN (day-neutral plants produce fruit throughout the growing season).

In the extended season scenario, both the amount of fruits and vegetables and their market potential in terms of dollars almost doubles when compared to the standard Minnesota growing season. Although most products – tomatoes, for example – increase their growing season by only a month under the extended scenario, the season for some high-volume products more than doubles, which has a significant impact on the total market potential and pounds of produce per season.

The significant impact applies to potatoes, onions, and strawberries. Each of these crops is in high demand among food service directors. In terms of availability under the extended scenario, onions and potatoes increase from three to nine months under ideal storage conditions. Strawberries are also in great demand, and day-neutral varieties grown in season-extending low tunnels offer a four-month picking season, compared with their standard June-early-July season.

TABLE 3: Educational market potential scenario for extended season (n=40)**

Product:	Total Months Available*	Lbs. of Produce	Average Retail Price	Market Potential
Beans	1	23,326	$1.47	$34,290
Broccoli	3	14,375	$1.55	$22,281
Cabbage	4	4,923	$0.81	$4,004
Carrots	7	312,545	$0.85	$265,663
Cauliflower	3	6,892	$1.10	$7,581
Cucumbers	1	2,612	$0.67	$1,750
Tomatoes	1	4,351	$1.30	$5,642
Peppers	1	1,575	$1.41	$2,221
Lettuce	3	34,378	$1.33	$45,551
Potatoes	7	36,221	$0.89	$32,297
Onions	7	401,256	$0.68	$272,854
Radishes	5	397	$1.00	$397
Summer Squash	1	150	$1.29	$193
Winter Squash	5	1,197	$0.94	$1,127
Apples	4	87,174	$1.35	$117,772
Melons	1	8,193	$0.56	$4,588
Strawberries	1	4,792	$2.93	$14,041
Wild Rice	9	3,943	$6.69	$26,377
Oatmeal	9	5,887	$2.72	$16,012
Dried Beans	9	-	$2.19	$-
Chicken	9	74,663	$1.48	$110,501
Ground Beef	9	85,988	$3.79	$325,896
Hot Dogs	9	14,512	$3.19	$46,294
Total Purchases		**1,129,351**		**$1,357,332**

*Months available during the 9-month school year.

**Market potential listed may differ from levels derived from pounds multiplied by price due to rounding in table for price and pounds

TABLE 4: Healthcare market potential scenario for extended growing season (n=109)

Product:	Total Months Available	Lbs. of Produce	Average Retail Price	Market Potential
Beans	4	17,963	$1.47	$26,405
Broccoli	6	27,663	$1.55	$42,877
Cabbage	7	34,410	$0.81	$27,987
Carrots	9	51,131	$0.85	$43,462
Cauliflower	6	15,287	$1.10	$16,816
Cucumbers	4	17,637	$0.67	$11,817
Tomatoes	4	22,008	$1.30	$28,537
Peppers	4	12,635	$1.41	$17,816
Lettuce	6	60,282	$1.33	$79,874
Potatoes	9	274,773	$0.89	$245,006
Onions	9	65,386	$0.68	$44,463
Radishes	8	12,438	$1.00	$12,438
Summer Squash	4	4,211	$1.29	$5,412
Winter Squash	5	8,141	$0.94	$7,666
Apples	5	68,192	$1.35	$92,128
Melons	3	46,160	$0.56	$25,850
Strawberries	4	15,638	$2.93	$45,818
Wild Rice	12	26,294	$6.69	$175,906
Oatmeal	12	39,228	$2.72	$106,699
Dried Beans	12	13,102	$2.19	$28,694
Chicken	12	211,582	$1.48	$313,142
Ground Beef	12	371,449	$3.79	$1,407,790
Hot Dogs	12	50,796	$3.19	$162,039
Total Purchases		**1,466,408**		**$2,968,641**

**Market potential listed may differ from levels derived from pounds multiplied by price due to rounding in table for price and pounds

Estimates of fruit and vegetable production

Data from a report on 2011 farm financials for assorted produce operations in Minnesota allowed us to roughly estimate the necessary acres needed to meet institutional demand for fresh fruits and vegetables. The report data comes from FINBIN, a farm financial database developed by the University of Minnesota Center for Farm Financial Management (FINBIN, 2012). See Appendix 5 or the full report. The gross return per acre or total sales per acre for reporting farms in 2011 was $8,719. Using this as a basic benchmark, growers in the region would need to dedicate a total of 31 to 71 acres to meet potential market demand under the two scenarios as outlined above.

ECONOMIC CONTRIBUTION OF FARM-TO-INSTITUTION

The economic contribution of an industry consists of direct and secondary effects. Direct effects are economic activities generated by the industry itself. In this case, we are measuring the effect of activities generated by institutions as they shift the payments made for food from wholesale businesses to regional farmers under two scenarios: (1) 2012-13 reported food purchases with local growers, and (2) potential economic impact of institutions purchasing 20 percent of locally-available foods in season.

Economic impact methods and terminology

To estimate the economic impact for our two scenarios we first calculated the direct impact to the region –a measure of new economic activity in the 16-county region in this instance. Since institutions are shifting their spending from one industry to another, we ascertained direct impact by (1) calculating the estimated total increase in sales made by regional farmers, and then (2) calculating the estimated total loss to wholesalers due to institutions substituting local foods for food currently supplied by the wholesaler.

In this model we are assuming the institutional buyers are paying a 25 percent premium above their typical wholesale pricing. Therefore, the loss to wholesalers is 75 percent of the increased farm sales. For example, educational institutions purchasing $100,000 in potatoes would have a $25,000 direct effect since $75,000 in sales is being subtracted from the region's wholesalers, and we need to account for this loss on the regional economy.

With direct impacts quantified, the data can be entered into an input-output model. Input-output models trace the flow of dollars throughout a local economy and can capture the indirect and induced, or ripple effects, of an economic activity. As noted, we used input-output modeling software and data from IMPLAN (MIG, Inc.) for this report.

Indirect effects are those associated with a change in economic activity due to spending on goods and services. In this case, these are the changes in the local economy occurring because of an increase in farm production that calls for an increase in farm inputs like seeds or hardware and related services like construction or accounting. These are business-to-business impacts.

Induced effects are those associated with a change in economic activity due to spending by the employees of businesses (labor) and by households. For this study, induced effects are primarily economic changes related to spending by input suppliers and farm households. These are business-to-consumer impacts.

Modest economic impact in previous year

In the 12 months before the survey (2012-13), food service directors reported over $33,000 in purchases from local growers and producers ($15,750 at educational facilities and $17,500 at healthcare facilities). This reflects a total economic contribution of farm-to-institution activities of about $17,400 to the region. This, in turn, includes about $14,000 in labor and proprietor income (a measure of how much goes into workers' pockets), as shown in Table 5. These are net effects. Farm-to-institution programs created positive economic activity even when accounting for lost wholesaler receipts, due to the 25 percent price premium for purchases from local producers in addition to agriculture having a greater economic impact than wholesale in Northeast and Central Minnesota.

TABLE 5: Total economic effects of 2012-13 farm-to-institution sales

Total local food purchases	$33,250		
Decreased wholesaler sales (75% of total)	$24,900		
	Employment	**Labor & Proprietor Income**	**Total Economic Contribution**
Direct effect	0	$10,712	$7,981
Indirect effect	0.1	$1,136	$2,447
Induced effect	0.1	$2,136	$7,052
Total effect	0.1	$13,984	$17,481
Estimates by Brigid Tuck, University of Minnesota Extension			

Significant potential sales, but modest employment effects

To estimate the potential economic impact of farm-to-institution activity in the region, Extension modeled institutions purchasing 20 percent of locally available foods in season for both the standard and extended season scenarios. Our model using 20 percent seems reasonable, considering the current pledge of hospitals such as St. Luke's in Duluth to make 20 percent of all food purchases local by 2020 and similar pledges, such as the Real Food Campus Commitment and the Lake Superior Good Food Network's Superior Compact Purchasing Commitment for the purchase of 20 percent of foods that are both locally available and in season. (See the Reference list for website addresses on the last two pledges.)

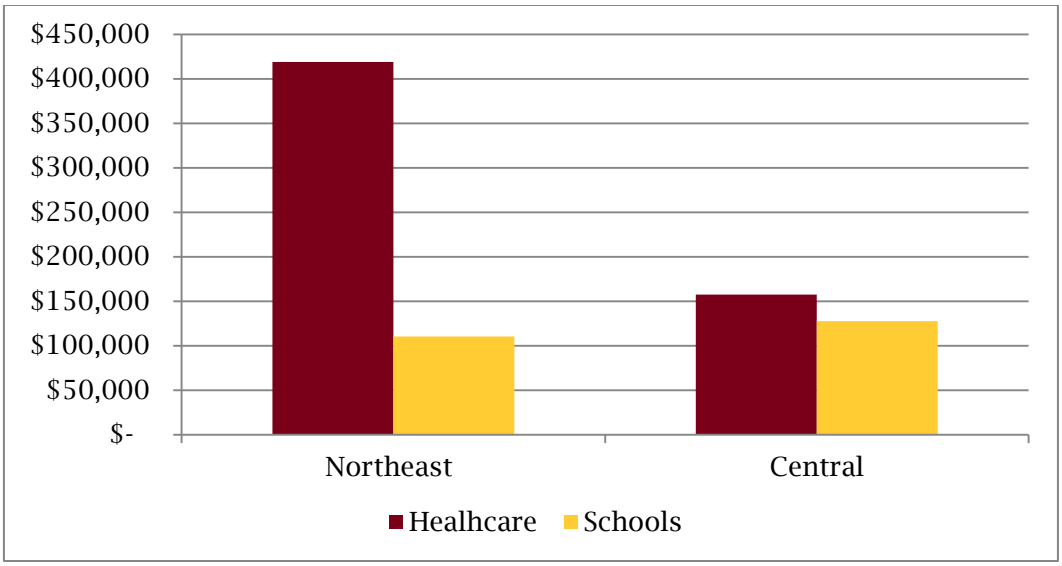
Twenty percent of all institutional sales add up to nearly $500,000 during a standard summer growing season, or nearly $600,000 during an extended growing season due to the longer fruit and vegetable season (see Table 6).

TABLE 6: Combined educational and healthcare institutional food purchases in Northwest Minnesota

	Full Standard Season	**Full Extended Season**	**20% Standard Season**	**20% of Extended Season**
Vegetables and Melons	$ 275,549	$ 629,172	$ 55,110	$ 125,834
Fruits	$ 67,266	$ 255,359	$ 13,453	$ 51,072
Whole Grains	$ 168,966	$ 168,966	$ 33,793	$ 33,793
Beef/Bison	$ 1,543,690	$ 1,543,690	$ 308,738	$ 308,738
Poultry	$ 341,899	$ 341,899	$ 68,380	$ 68,380
Total:	**$ 2,397,371**	**$ 2,939,087**	**$ 479,474**	**$ 587,817**

The total sales to institutions, however, are not evenly distributed across the region. Instead, contributions to total sales are commensurate with the number of meals served in each sub-region (see Figure 10). Healthcare, for example, is disproportionally represented in Northeast Minnesota where a large number of healthcare facilities operate.

FIG. 10: Contributions to 20 percent local purchases in extended season scenario by sub-region and institutional type



After subtracting 75 percent of total sales from the region's wholesale industry, the total economic contribution of farm-to-institution activities would be about $249,000 or $366,000 to the region under the standard and extended seasons respectively as shown in Tables 7 and 8.

TABLE 7: Total economic effect of 20 percent of farm-to-institution sales for regular season

Total local food purchases	$	614,553	
Decreased wholesaler sales (75% of total)	$	460,915	
	Employment	**Labor Income**	**Output**
Direct effect	1.2	($17,410)	$144,219
Indirect effect	0.8	$9,594	$107,376
Induced effect	0	($847)	($2,735)
Total effect	1.9	($8,663)	$248,860
			Estimates by Brigid Tuck, University of Minnesota Extension

TABLE 8: Total economic effects of 20 percent of farm-to instituion sales for extended season

Total local food purchases	$	814,765	
Decreased wholesaler sales (75% of total)	$	611,074	
	Employment	**Labor Income**	**Output**
Direct effect	0.9	$71,121	$194,087
Indirect effect	1.3	$17,204	$117,691
Induced effect	0.5	$16,416	$54,257
Total effect	2.7	$104,742	$366,034
			Estimates by Brigid Tuck, University of Minnesota Extension

Note: Tables for farm-to-institution economic impact by sub-regions are listed in Appendices 1-3.

RESEARCH LIMITATIONS

The primary purpose of this study is to provide basic estimates for the size of the local food market for healthcare and educational facilities in Northeast and Central Minnesota. These estimates may not reflect the market in other regions of Minnesota or the nation.

These market estimates are based on sound survey research methods and reliable secondary data sources. However, some assumptions and secondary data used to estimate market size may not accurately represent the conditions of individual institutional buyers or growers.

This report assumes that local growers and producers can capture 20 percent of the potential institutional market for the farm products identified as viable for local producers. However it is possible that the 20 percent level is higher than what will be realistic. The survey research carried out for this report found that local purchases make up 0.7 percent of purchases by healthcare institutions and 2.2 percent of the purchases by educational institutions for farm products that could be produced locally. The estimated economic impact of sales to institutions by local growers and producers will be lower if the share of the market captured by those local growers and producers is less.

The economic modeling carried out for this report included a 25 percent price premium for local farm products, over the prices for comparable products available through wholesalers. While we have evidence that local growers and producers are charging and receiving a premium for their farm products, we do not know if healthcare and educational institutions would be willing and able to pay a 25 percent premium for a significant share of their food purchases. We suspect that paying a price premium for small and occasional purchases from local farmers is different than doing so for 20 percent of an institution's purchases for locally produced farm products.

Tight budgets and thin margins could make the purchases of local farm products difficult for institutions. If institutions do purchases local farm goods at a premium price, they may need to pass the costs on to taxpayers or to residents and students, or they may need to reduce expenditures elsewhere in their budgets. All of these moves would affect the net economic impacts from local purchases, and this report does not model these possible scenarios. See the 2010 Extension report on the economic impact of farm-to-school (The Economic Impact of Farm-to-School Lunch Programs: A Central Minnesota Example at http://www.extension.umn.edu/food/farm-to-school/research/farm-to-school/docs/cfans_asset_289518-1.pdf) for an example of how different pricing scenarios affect economic impacts from the IMPLAN model when the higher costs to schools for local foods are distributed to taxpayers or the purchasers.

Individual growers may face factors quite different from those used to produce the estimates for this report, especially when it comes to production and pricing. These factors can have a significant impact on the ability of growers to serve the institutional markets. Any sales arrangements between individual institutional buyers and growers should be based on mutually agreed-upon terms and conditions, such as price, delivery times, and product quality. It's important to consider the individual needs of potential institutional buyers when entering this market for local foods.

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APPENDIX 1: FARM-TO-INSTITUTION MARKET POTENTIAL BY REGION

Market Potential for Northeast Minnesota (Aitkin, Carlton, Cook, Itasca, Koochiching, Lake, St. Louis Counties)

	Full Standard Season	Full Extended Season	20% Standard Season	20% Extended Season
Vegetables and Melons	$ 304,881	$ 694,197	$ 60,976	$ 138,839
Fruits	$ 62,109	$ 210,213	$ 12,422	$ 42,043
Whole Grains	$ 311,525	$ 311,525	$ 62,305	$ 62,305
Beef/Bison	$ 1,125,749	$ 1,125,749	$ 225,150	$ 225,150
Poultry	$ 304,880	$ 304,880	$ 60,976	$ 60,976
Total:	**$ 2,109,145**	**$ 2,646,564**	**$ 421,829**	**$ 529,313**

Market Potential for Central Minnesota (Cass, Crow Wing, Morrison, Wadena, and Todd Counties)

	Full Standard Season	Full Extended Season	20% Standard Season	20% Extended Season
Vegetables and Melons	$ 174,290	$ 594,564	$ 34,858	$ 118,913
Fruits	$ 15,803	$ 59,169	$ 3,161	$ 11,834
Whole Grains	$ 52,285	$ 52,285	$ 10,457	$ 10,457
Beef/Bison	$ 620,932	$ 620,932	$ 124,186	$ 124,186
Poultry	$ 100,313	$ 100,313	$ 20,063	$ 20,063
Total:	**$ 963,623**	**$ 1,427,263**	**$ 192,725**	**$ 285,453**

APPENDIX 2: FARM-TO-INSTITUTION ECONOMIC IMPACT OF 20 PERCENT OF STANDARD SEASON BY REGION

Economic Impact for Northeast Minnesota (Aitkin, Carlton, Cook, Itasca, Koochiching, Lake, St. Louis Counties)

Total local food purchases $ 421,829

Decreased wholesaler sales (75% of total) $ 316,372

Impact Type	Employment	Labor Income	Output
Direct Effect	3.9	($20,226)	$98,255
Indirect Effect	1.3	$12,971	$83,842
Induced Effect	0	($968)	($3,030)
Total Effect	5.2	($8,223)	$179,067

Economic Impact for Central Minnesota (Cass, Crow Wing, Morrison, Wadena, and Todd Counties)

Total local food purchases $ 192,725

Decreased wholesaler sales (75% of total) $ 144,544

Impact Type	Employment	Labor Income	Output
Direct Effect	0	($2,499)	$45,964
Indirect Effect	0.1	$1,044	$27,497
Induced Effect	0	($51)	($175)
Total Effect	0.1	($1,506)	$73,285

APPENDIX 3: FARM-TO-INSTITUTION ECONOMIC IMPACT OF 20 PERCENT OF EXTENDED SEASON BY REGION

Economic Impact for Northeast Minnesota (Aitkin, Carlton, Cook, Itasca, Koochiching, Lake, St. Louis Counties)

Total local food purchases $ 529,313

Decreased wholesaler sales (75% of total) $ 396,985

Impact Type	Employment	Labor Income	Output
Direct Effect	4.1	$25,072	$124,983
Indirect Effect	1.8	$19,913	$89,497
Induced Effect	0.3	$8,899	$28,464
Total Effect	6.2	$53,884	$242,944

Economic Impact for Central Minnesota (Cass, Crow Wing, Morrison, Wadena, and Todd Counties)

Total local food purchases $ 285,453

Decreased wholesaler sales (75% of total) $ 214,090

Impact Type	Employment	Labor Income	Output
Direct Effect	-0.1	$39,435	$69,104
Indirect Effect	0.2	$3,777	$31,942
Induced Effect	0.2	$6,573	$23,762
Total Effect	0.3	$49,786	$124,808

APPENDIX 4: SURVEY INSTRUMENT

Instructions: Please feel free to estimate and answer the questions to the best of your knowledge. Once complete, please return in the stamped and self-addressed envelope included with the survey.

1. **Does your facility prepare and serve meals?**

   ☐ Yes (*please continue with survey*) ☐ No *(Please return in self-addressed envelope)*

   If yes, do you prepare meals for other facilities? Which ones?

   _____

2. **How many total meals does your institution prepare and serve daily?**

   _____meals per day (*Example: Breakfast and Lunch to 100 people = 200 meals per day*)

   If a school, do you have a summer feeding program? ☐ Yes ☐ No

   a. If yes, how many meals are served per day? _____ meals per day
   b. If yes, how many weeks? _____weeks per summer

3. **How much of the following products *on average* do you purchase?**

   Please estimate the total amount your institution purchases regardless of the vendor whether from a distributor or another source. Please answer in the units and time period you most commonly use. For example, each week you may buy carrots by the pound and apples by the case. See the first row for an example of how to fill out the following table.

Product	Quantity purchased	Units (example: cases, lbs.)	Time Period (week, month, year)	Preferred form (example: shredded, diced, etc.)	Would you consider buying in *whole or unprocessed* form? (check if yes)
Fresh Vegetables:					
Beans				☐	☐
Broccoli				☐	☐
Cabbage				☐	☐
Carrots				☐	☐
Cauliflower				☐	☐
Cucumbers				☐	☐
Tomatoes				☐	☐
Peppers				☐	☐
Lettuce				☐	☐
Potatoes				☐	☐
Onions				☐	☐
Radishes				☐	☐
Summer Squash				☐	☐

Product	Quantity purchased	Units (example: cases, lbs.)	Time Period (week, month, year)	Preferred form (example: shredded, diced, etc.)	Would you consider buying in *whole or unprocessed form*? (check if yes)
Fresh Fruits:					
Apples				☐	☐
Melons				☐	☐
Strawberries				☐	☐
Other fruit: _____				☐	☐
Whole Grains:					
Wild Rice				☐	☐
Oatmeal				☐	☐
Dried beans				☐	☐
Meat:					
Chicken				☐	☐
Ground Beef				☐	☐
Beef hot dogs				☐	☐
Ground Bison				☐	☐
Bison dogs				☐	☐

4. **Do you have a contract with a food vendor that prohibits you from making purchases directly from local growers?**

   ☐ Yes ☐ No

5. **Have you purchased foods from a local farmer or producer in the last year?**

   ☐ Yes (go to 5a) ☐ No (go to 5b)

   5a. If yes, how much did you spend on purchases from local farmers or producers in the past year?

Food Category	$0	$1-$250	$251-$500	$501-$750	$751-$1,000	Over $1,000
Vegetables and Melons	☐	☐	☐	☐	☐	☐
Fruits	☐	☐	☐	☐	☐	☐
Whole Grains	☐	☐	☐	☐	☐	☐
Beef/Bison	☐	☐	☐	☐	☐	☐
Poultry	☐	☐	☐	☐	☐	☐

   5b. If no, do you have interest in purchasing from a local farmer as part of a farm-to-institution program?

   ☐ Yes ☐ No

Please return in the stamped and self-addressed envelope included. If lost, please return to Ryan Pesch, c/o Center for Small Towns, University of Minnesota, Morris, 600 East 4th Street, Morris, MN 56267

APPENDIX 5: 2011 FINBIN REPORT ON ASSORTED VEGETABLE OPERATIONS

Crop Enterprise Analysis
(Farms Sorted By Years)

Vegetables, Assorted

Avg of	All Farms	2011
Number of fields	8	8
Number of farms	6	6
Acres	4.13	4.13
Yield per acre ($)	6,962.22	6,962.22
Operators share of yield %	100.00	100.00
Value per $	1.25	1.25
Total product return per acre	8,719.11	8,719.11
Gross return per acre	8,719.11	8,719.11
Direct Expenses		
Seed	532.94	532.94
Fertilizer	248.88	248.88
Crop chemicals	29.79	29.79
Irrigation energy	11.95	11.95
Packaging and supplies	328.12	328.12
Fuel & oil	639.05	639.05
Repairs	246.22	246.22
Custom hire	11.18	11.18
Hired labor	1,024.82	1,024.82
Land rent	21.52	21.52
Machinery leases	6.21	6.21
Utilities	224.73	224.73
Hauling and trucking	148.97	148.97
Marketing	51.76	51.76
Operating interest	9.15	9.15
Miscellaneous	372.88	372.88
Total direct expenses per acre	3,908.15	3,908.15
Return over direct exp per acre	4,810.96	4,810.96
Overhead Expenses		
Hired labor	364.98	364.98
Building leases	44.24	44.24
RE & pers. property taxes	39.64	39.64
Farm insurance	95.49	95.49
Utilities	133.58	133.58
Dues & professional fees	116.05	116.05
Interest	380.89	380.89
Mach & bldg depreciation	457.85	457.85
Miscellaneous	147.09	147.09
Total overhead expenses per acre	1,779.82	1,779.82
Total dir & ovhd expenses per acre	5,687.97	5,687.97
Net return per acre	3,031.14	3,031.14
Government payments	-	-
Net return with govt pmts	3,031.14	3,031.14
Labor & management charge	2,460.61	2,460.61

Net return over lbr & mgt	570.53	570.53
Cost of Production		
Total direct expense per $	0.56	0.56
Total dir & ovhd exp per $	0.82	0.82
Less govt & other income	0.82	0.82
With labor & management	1.17	1.17
Net value per unit	1.25	1.25
Machinery cost per acre	1,343.07	1,343.07
Est. labor hours per acre	362.28	362.28

Data Source(s): Riverland Community and Technical College, 5 farms
South Central and Minnesota West Community and Technical College, 1 farms

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Report Summary

1. Report number	245097
2. Location	
State:	Minnesota
3. Farm Characteristics	
Year(s):	2011
Farming practice:	All